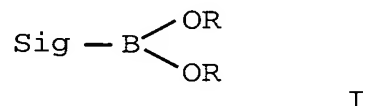


This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

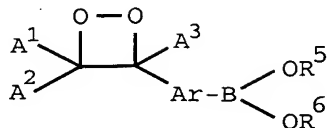
Claim 1 (Currently Amended): A compound I having the formula:



- 5 wherein Sig ~~comprises~~ is an aromatic or heteroaromatic ring group substituted with a dioxetane ring and is capable of being detected by ~~a detectable property~~ chemiluminescence or bioluminescence when the group B(OR)₂ is replaced by a hydroxyl group (-OH) or its anion (-O⁻), B is a boron atom,
- 10 each R is independently selected from hydrogen and lower alkyl groups and can be joined together as a straight or branched alkylene chain forming a five or six-membered ring or an arylene ring, ~~wherein the compound of formula I itself does not possess the detectable property or does so~~
- 15 ~~only to a very weak degree and the detectable property is selected from chemiluminescence or bioluminescence.~~

Claims 2-4 (Canceled)

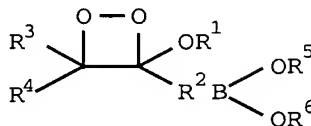
Claim 5 (Currently Amended): The compound of claim 4 1
 having the formula:



5 wherein A¹ - A³ represent organic groups having from 1-20
 carbon atoms and can optionally contain heteroatoms
 selected from N, O and S atoms, and Ar is an aromatic or
 heteroaromatic ring group, and wherein A¹-A³, and Ar can be
 substituted with non-hydrogen atoms, and R³ and R⁴ are
 10 independently selected from acyclic and cyclic organic
 groups containing from 3-20 carbon atoms and which can be
 substituted with heteroatoms, and R⁵ and R⁶ are
 independently selected from hydrogen and lower alkyl groups
 and can be joined together as a straight or branched
 15 alkylene chain forming a five or six-membered ring or an
 arylene ring.

Claim 6 (Original): The compound of claim 4 wherein A¹ and
 A² or A¹ and A³ or A³ and Ar are combined to form a ring.

Claim 7 (Original): The compound of claim 4 wherein the dioxetane has the formula:



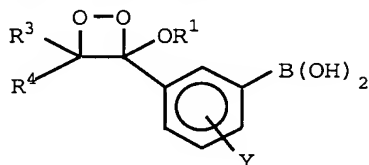
5 wherein R¹ is is an organic group having from 1-20 carbon atoms which can be combined with R² or R³, R² is an aromatic or heteroaromatic ring group which can include additional substituents selected from halogens, alkyl, substituted alkyl, alkoxy, substituted alkoxy, carbonyl, carboxyl,
 10 amino and alkylamino groups, and R³ and R⁴ are independently selected from acyclic and cyclic organic groups containing from 3-20 carbon atoms and which can be substituted with heteroatoms.

Claim 8 (Original): The compound of claim 7 wherein R³ and R⁴ are combined together in a cyclic or polycyclic alkyl or a cyclic or polycyclic alkenyl group which is spiro-fused to the dioxetane ring and contains 6 to 20 carbon atoms and
 5 which can include additional non-hydrogen substituents.

Claim 9 (Original): The compound of claim 7 wherein R³ and R⁴ are combined together to form an adamantyl group which can be substituted with one or more substituent groups selected from halogens, alkyl, substituted alkyl, alkoxy,
 5 substituted alkoxy, carbonyl, carboxyl, phenyl, substituted phenyl, amino and alkylamino groups.

Claim 10 (Original): The compound of claim 7 wherein R³ and R⁴ are each branched alkyl or cycloalkyl groups having from 3-20 carbon atoms.

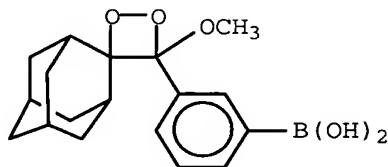
Claim 11 (Original): The compound of claim 7 wherein the signalling compound has the formula:



5

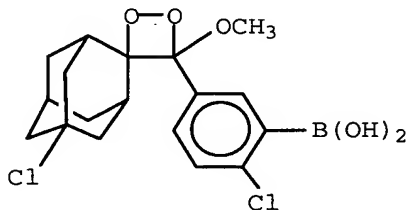
wherein Y is a substituent group selected from hydrogen, halogens, alkyl, substituted alkyl, alkoxy, substituted alkoxy, carbonyl, carboxyl, phenyl, substituted phenyl, amino and alkylamino groups.

Claim 12 (Original): The compound of claim 9 having the formula:



5

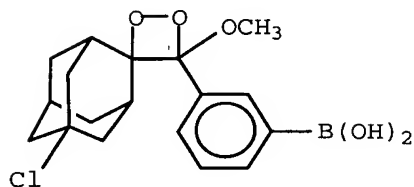
Claim 13 (Original): The compound of claim 11 having the formula:



5

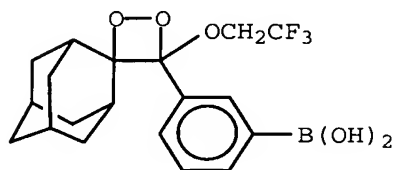
Claim 14 (Original): The compound of claim 9 having the formula:

5



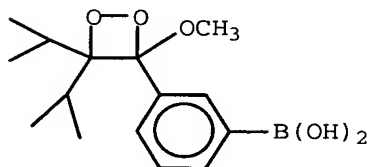
Claim 15 (Original): The compound of claim 9 having the formula:

5



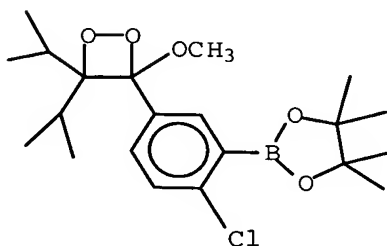
Claim 16 (Original): The compound of claim 9 having the formula:

5

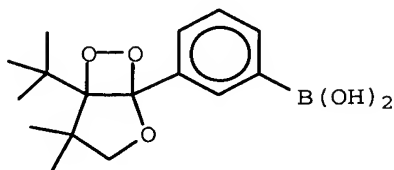


Claim 17 (Original): The compound of claim 9 having the formula:

5

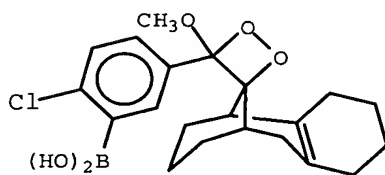


Claim 18 (Original): The compound of claim 9 having the formula:



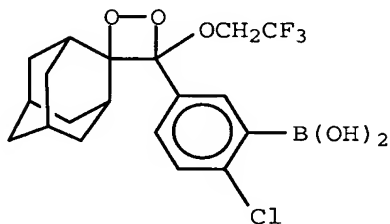
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Claim 19 (Original): The compound of claim 8 having the formula:



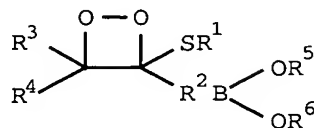
5

Claim 20 (Original): The compound of claim 9 having the formula:



5

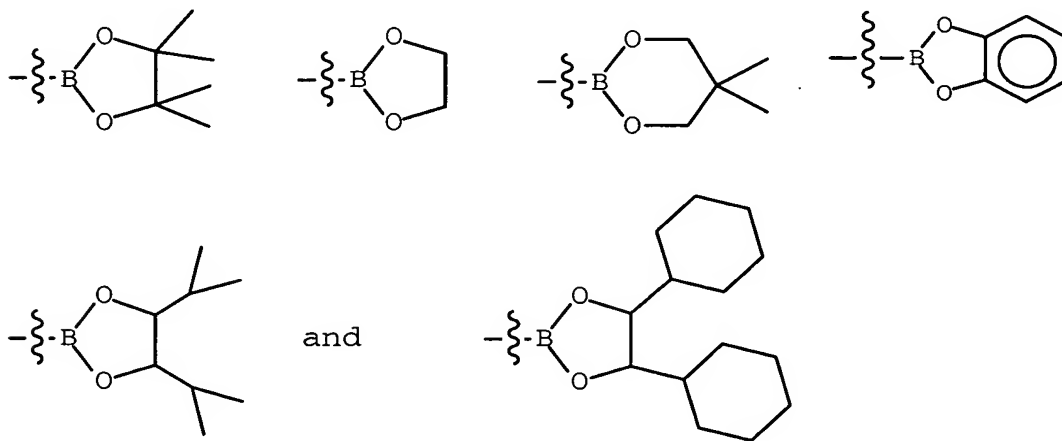
Claim 21 (Original): The compound of claim 5 wherein the dioxetane has the formula:



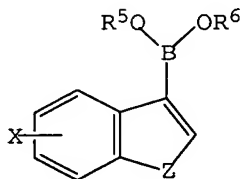
5 wherein R¹ is an organic group having from 1-20 carbon atoms which can be combined with R² or R³, R² is an aromatic or heteroaromatic ring group which can include additional substituents selected from halogens, alkyl, substituted alkyl, alkoxy, substituted alkoxy, carbonyl, carboxyl,
 10 amino and alkylamino groups, and R³ and R⁴ are independently selected from acyclic and cyclic organic groups containing from 3-20 carbon atoms and which can be substituted with heteroatoms.

Claim 22 (Original): The compound of claim 5 wherein R⁵ and R⁶ are each hydrogen atoms.

Claim 23 (Original): The compound of claim 5 wherein R⁵ and R⁶ are combined to form a ring selected from:



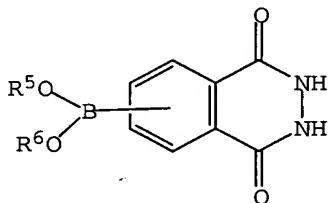
Claim 24 (Currently Amended): ~~The compound of claim 1 A~~
compound having the formula:



5

wherein Z is selected from O, S and NR⁸, wherein R⁸ is H or Si(R⁹)₃, R⁹ is C₁-C₆ alkyl or phenyl, and X represents one or two iodine, bromine or chlorine atoms, and R⁵ and R⁶ are independently selected from hydrogen and lower alkyl groups
10 and can be joined together as a straight or branched alkylene chain forming a five or six-membered ring or an arylene ring.

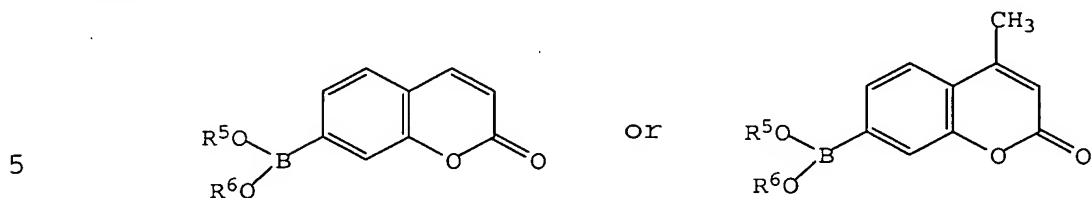
Claim 25 (Currently Amended): ~~The compound of claim 1 A~~
compound having the formula:



5

wherein R⁵ and R⁶ are independently selected from hydrogen and lower alkyl groups and can be joined together as a straight or branched alkylene chain forming a five or six-
10 membered ring or an arylene ring.

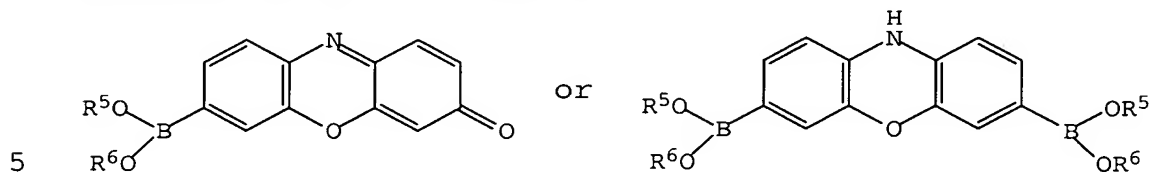
Claim 26 (Currently Amended): ~~The compound of claim 1~~ A compound having the formula:



wherein R⁵ and R⁶ are independently selected from hydrogen and lower alkyl groups and can be joined together as a straight or branched alkylene chain forming a five or six-membered ring or an arylene ring.

10

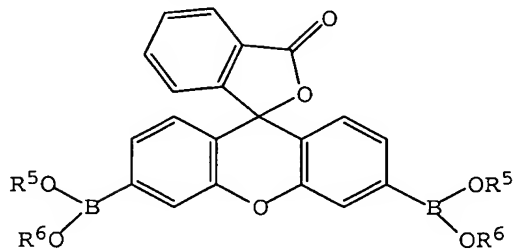
Claim 27 (Currently Amended): ~~The compound of claim 1~~ A compound having the formula:



wherein R⁵ and R⁶ are independently selected from hydrogen and lower alkyl groups and can be joined together as a straight or branched alkylene chain forming a five or six-membered ring or an arylene ring.

Claim 28 (Currently Amended): ~~The compound of claim 1 A~~
compound having the formula:

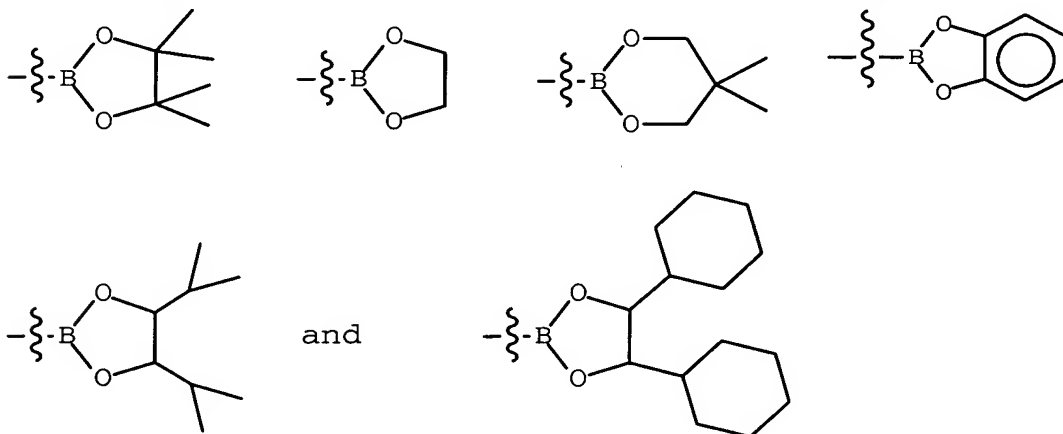
5



wherein R⁵ and R⁶ are independently selected from hydrogen
 and lower alkyl groups and can be joined together as a
 straight or branched alkylene chain forming a five or six-
 10 membered ring or an arylene ring.

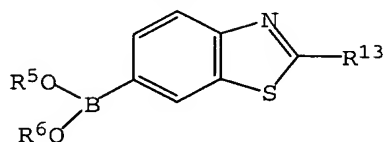
Claim 29 (Original): The compound of claim 1 wherein the R
 groups are combined to form a ring selected from:

5

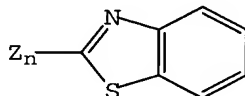


Claim 30 (Original): The compound of claim 1 wherein the R
 groups are both hydrogen atoms.

Claim 31 (Original): A compound having the formula:

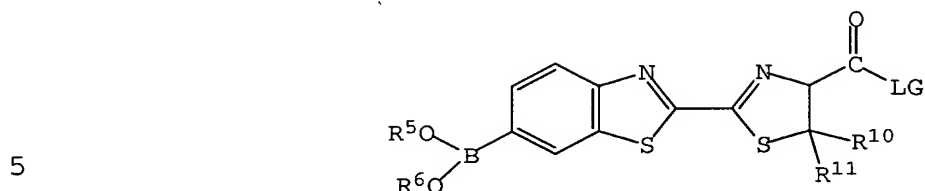


5 which is capable of being detected by a detectable property
selected from fluorescence, chemiluminescence or
bioluminescence when the group B(OR⁵)(OR⁶) is replaced by a
hydroxyl group (-OH) or its anion (-O⁻), wherein B is a
boron atom, R⁵ and R⁶ are independently selected from
10 hydrogen and lower alkyl groups and can be joined together
as a straight or branched alkylene chain forming a five or
six-membered ring or an arylene ring, and R¹³ is
independently selected from cyano, imine, carbonyl,
thiazole, carbonyl-substituted thiazole and benzothiazole
15 groups or a group



wherein Z is C-C double or triple bond or aromatic ring and
n is 1 or 2, wherein the compound itself does not possess
20 the detectable property or does so only to a very weak
degree.

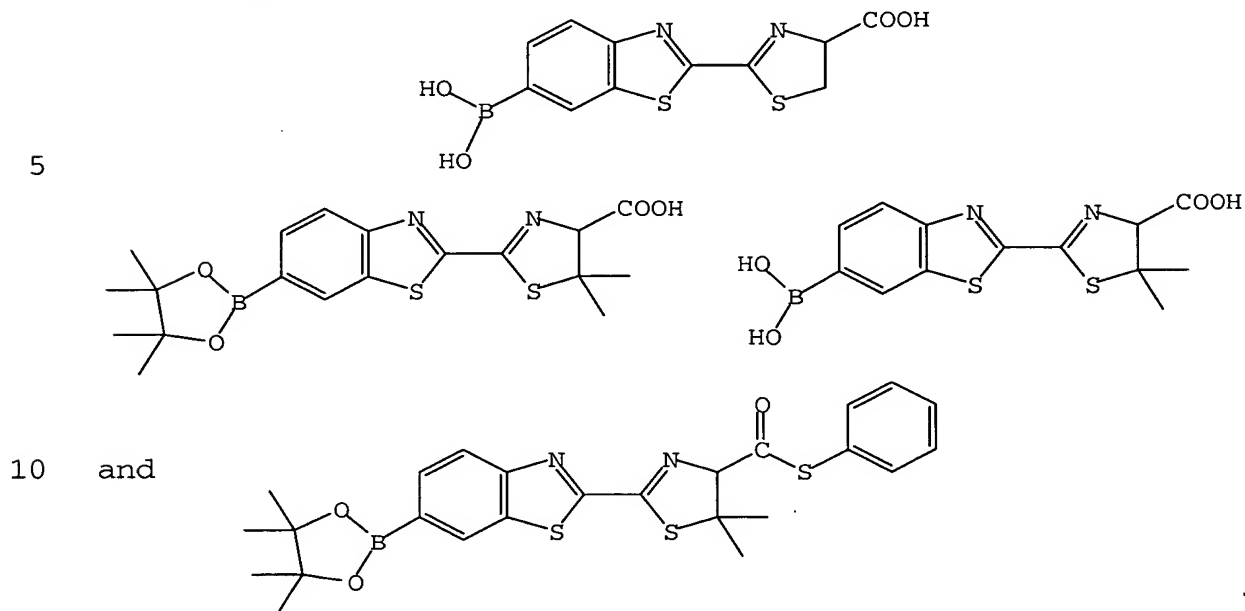
Claim 32 (Original): The compound of claim 30 having the formula:



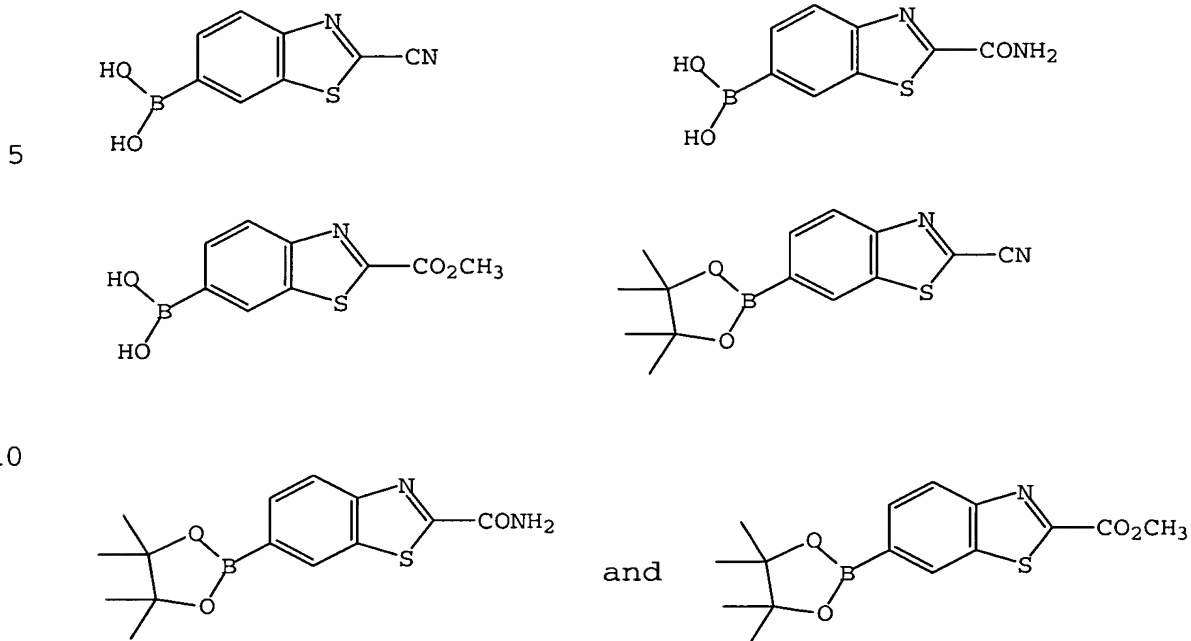
wherein LG is a leaving group and R^{10} and R^{11} are hydrogen or C_1 - C_4 alkyl, and R^5 and R^6 are independently selected from hydrogen and lower alkyl groups and can be joined together as a straight or branched alkylene chain forming a
10 five or six-membered ring or an arylene ring.

Claim 33 (Original): The compound of claim 31 wherein the leaving group is selected from OH, OR^{12} , SR^{12} and O-AMP groups, R^{12} is a substituted or unsubstituted alkyl or aryl group, and AMP is adenosine monophosphate.

Claim 34 (Original): The compound of claim 31 selected from the group:



Claim 35 (Original): The compound of claim 30 selected from the group:



15

Claim 36 (Original): The compound of claim 30 selected from the group:

